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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/613,658	07/02/2003	Martin A. Sanzari	30490-104335	7239

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EXAMINER	
POLYZOS, FAYE S	
ART UNIT	**PAPER NUMBER**
2878	

DATE MAILED: 05/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/613,658	SANZARI, MARTIN A.	
	Examiner	Art Unit	
	Faye Polyzos	2878	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 July 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *02 July 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *10/25/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-5, 10-14 and 16-18 are rejected under 35 U.S.C. 102(b) as being anticipated by *Sinnar et al (US 4,808,824).*

Regarding claim 1, *Sinnar* discloses a method for distinguishing between two different materials (121)(131) comprising the steps of: directing radiation of two different wavelengths (32)(34) at an inspection site (49), radiation of one of the wavelengths being more strongly absorbed by one material relative to its absorption by the other material; measuring the intensity of reflected radiation resulting from the radiation directed at the inspection site; and determining which of the two materials is present at the inspection site based on the intensity of the reflected radiation resulting from directed radiation of one of the wavelengths relative to the intensity of the reflected radiation resulting from directed radiation of the other wavelength (See Generally Figs. 1 and 3A-3B and col. 1, lines 51-65, col. 4, lines 4-18 and col. 5, lines 41-62).

Regarding claim 2, *Sinnar* discloses the method comprises comparing the intensity of the reflected radiation resulting from directed radiation of one of the wavelengths to a first absorption reference value to generate a first difference value, comparing the intensity of the reflected radiation resulting from directed radiation of the

other wavelength to a second absorption reference value to generate a second difference value, a comparison value in excess of a preselected number being indicative of the presence of one of the materials at the inspection site (See Generally Figs. 3A-3B and col. 5, lines 41-62).

Regarding claim 3, *Sinnar* discloses a method comprises activating a radiation source (10) to generate the radiation of two different wavelengths and alternately positioning a first band-pass filter (218) that passes radiation of the other wavelength between the radiation source and the inspection site or alternatively between the inspection site and a detector of the reflected radiation (See Generally Fig. 5 and col. 3, lines 30-40 and col. 7, lines 15-19, 47-61).

Regarding claims 4-5, Sinnar discloses a method wherein comprises activating a first coherent radiation source to generate radiation of one of the wavelengths (32) and activating a second coherent radiation source to generate radiation of the other wavelength (34) wherein the first and second coherent radiation sources (80)(90) are alternately activated to alternately direct radiation each of the two different wavelengths at the inspection site (See Generally Fig. 6 and col. 9, lines 3-17).

Regarding claim 10, *Sinnar* discloses a method for selectively removing one of the two materials from an inspection site comprising the steps of determining which of the two materials is present at the inspection site and selectively removing one of the materials (ice) from the inspection site (aircraft) responsive to the determination (col. 2, lines 55-65).

Regarding claim 11, *Sinnar* discloses a method of determining whether a substance is present on a base material at an inspection site comprising: directing light of a first wavelength (32) at the inspection site (49); determining a first inspection site absorption value corresponding to absorption of the light of the first wavelength directed at the inspection site; calculating a first different value by comparing the first inspection site absorption value to a first absorption reference value; directing light of a second wavelength (34) at the inspection site (49); determining a second inspection site absorption value corresponding to absorption of light of the second wavelength directed at the inspection site; calculating a second different value by comparing the second inspection site absorption value to a second absorption reference value; and generating an output signal indicating whether the substance is present at the inspection site based on the difference between the first difference value and the second difference value (See Generally Figs. 1 and 3A-3B and col. 1, lines 51-65, col. 4, lines 4-18 and col. 5, lines 41-62 and col. 7, lines 62-68 – col. 8, lines 1-13).

Regarding claim 12, *Sinnar* discloses of an apparatus for distinguishing between two different materials (121)(131) comprising: a radiation module (10) for generating radiation of two different wavelengths (32)(34) and directing the radiation to an inspection site (49); a detector module (60) for receiving radiation reflected from the inspection site and generating a corresponding reflection signal; and a control module for receiving the reflection signal, determining which of the two materials (40)(40') is present at the inspection site based on the intensity of reflected radiation resulting from directed radiation of one of the wavelengths relative to the intensity of reflected radiation

resulting from directed radiation of the other wavelength, and generating an output signal indicating which of the two materials is present at the inspection site (See Generally Figs. 1 and 3A-3B and col. 1, lines 51-65, col. 4, lines 4-18 and col. 5, lines 41-62).

Regarding claims 13-14, Sinnar discloses the radiation module comprises a first coherent radiation source (80) that generates radiation of one of the wavelengths and a second coherent radiation source (90) that generates radiation of the other wavelength wherein the control module is coupled to the radiation module and controls the radiation module to alternately activate the first and second coherent radiation sources (See Generally Fig. 6 and col. 9, lines 3-17).

Regarding claim 16, *Sinnar* discloses the apparatus wherein the radiation module comprises a non-coherent radiation source, a first band-pass filter that passes radiation of one of the wavelengths, a second band-pass filter that passes radiation of the other wavelength, and a pulse generator for alternately passing the first and second band-pass filter between the non-coherent radiation source and the inspection site (col. 3, lines 22-40 and col. 7, lines 11-35).

Regarding claim 17, *Sinnar* discloses the apparatus further comprising a first optical transmission medium for directing radiation from the radiation module to the inspection site and a second optical transmission medium for directing the reflected radiation to the detector module (col. 4, lines 66-68 and col. 5, lines 1-30).

Regarding claim 18, Sinnar discloses the device selectively removes one of the two different materials (ice) from an inspection site (aircraft), determining which of the

two materials is present at the inspection site and an removal apparatus for selectively removing one of the materials from the inspection site responsive to the output signal (col. 2, lines 55-65).

Claim Rejections - 35 USC § 103

3. Claims 6-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Sinnar et al (US 4,808,824)* as applied to claim 1 above, and further in view of *V.Lilienfeld-Toal et al (EP 1 048 265 A1).*

Regarding claim 6, Sinnar discloses the use of a laser to generate radiation of two different wavelengths (Fig. 6 and col. 9, lines 3-17). Sinnar does not specifically disclose of a quantum cascade laser. *V.Lilienfeld-Toal* discloses activating quantum cascade laser to generate the radiation of two different wavelengths (col. 4, lines 32-44 and claim 4). *V.Lilienfeld-Toal* teaches a preferred laser device includes a semiconductor laser having a quantum well structure where quantum well structures are made by alternating layers of different semiconductor material and form energy sub-bands wherein sub-band transitions are used for operation of the laser (col. 3, lines 12-21). Therefore, it would have been obvious to a person of ordinary skill in the art ot modify the method suggested by *Sinnar* to comprise of a quantum cascade laser as the radiation source as suggested by *V.Lilienfeld-Toal* to allow for a more versatile apparatus.

Regarding claims 7-8, *Sinnar* discloses the radiation of the two wavelengths is in the infrared region (col. 3, lines 10-13).

Regarding claim 9, *Sinnar* discloses the radiation of one of the wavelengths can have a wavenumber approximately 1750 cm^-1 (See Generally Fig. 3A-3B).

4. Claims 15 and 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Sinnar* et al (US 4,808,824) as applied to claim 12 above, and further in view of *V.Lilienfeld-Toal* et al (EP 1 048 265 A1).

Regarding claim 15, Sinnar discloses the use of a laser to generate radiation of two different wavelengths (Fig. 6 and col. 9, lines 3-17). Sinnar does not specifically disclose of a quantum cascade laser. *V.Lilienfeld-Toal* discloses activating quantum cascade laser to generate the radiation of two different wavelengths (col. 4, lines 32-44 and claim 4). *V.Lilienfeld-Toal* teaches a preferred laser device includes a semiconductor laser having a quantum well structure where quantum well structures are made by alternating layers of different semiconductor material and form energy sub-bands wherein sub-band transitions are used for operation of the laser (col. 3, lines 12-21). Therefore, it would have been obvious to a person of ordinary skill in the art ot modify the method suggested by *Sinnar* to comprise of a quantum cascade laser as the radiation source as suggested by *V.Lilienfeld-Toal* to allow for a more versatile apparatus.

Regarding claims 19-20, *Sinnar* discloses method wherein the radiation of the two different wavelengths is in the infrared region (col. 3, lines 10-13).

Regarding claim 21, *Sinnar* discloses the radiation of one of the wavelengths can have a wavenumber approximately 1750 cm^-1 (See Generally Fig. 3A-3B).

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Faye Polyzos whose telephone number is 571-272-2447. The examiner can normally be reached on Monday thru Friday from 7:30 AM to 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Porta can be reached on 571-272-2444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

7. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

FP

DAVID PORTA
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